

CLAIMS

What is claimed is:

1. A method for streaming multimedia content in a wireless communication system comprising:
 - 5 receiving, in a data network, a request from a mobile device to stream multimedia content to the mobile device from the data network, the request being transmitted over a wireless connection;
 - streaming a portion of the requested multimedia content from the data network to the mobile device;
 - 10 detecting a termination of the wireless connection during the streaming;
 - retaining information in at least one of an entity in the data network and the mobile device, the information indicating a point in the multimedia content stream where the termination of the wireless connection occurred;
 - re-establishing the wireless connection; and
 - 15 resuming streaming of the multimedia content based on the retained information.
2. The method of claim 1, wherein the retained information is retained in an extensible markup language tag attribute.
- 20 3. The method of claim 1, wherein the multimedia content is encoded with the Synchronized Multimedia Integration Language and the retained information contains a time stamp associated with the point in the multimedia content stream where termination of the wireless connection occurred.

4. The method of claim 1, wherein retaining the retained information comprises retaining an identifier of the mobile device.

5. The method of claim 4, wherein identifier of the mobile device comprises
5 one of a point-to-point protocol link identifier, a network address identifier and an Internet Protocol address.

6. The method of claim 1, wherein receiving the request from the mobile device comprises receiving a request in accordance with the Real Time Streaming
10 Protocol (RTSP).

7. The method of claim 6, wherein streaming the multimedia content comprises streaming the content in accordance with the RTSP.

8. The method of claim 1, wherein streaming the multimedia content
15 comprises:

communicating the multimedia content from an application/content host to a multimedia gateway via a multicast router;

communicating the multimedia content from the multimedia gateway to a home
20 agent device;

communicating the multimedia content from the home agent device to a packet data serving node (PDSN);

communicating the multimedia content from the PDSN to a base station controller (BSC);

communicating the multimedia content from the BSC to a base transceiver station (BTS); and

5 communicating the multimedia content from the BTS to the mobile device.

9. The method of claim 1, wherein detecting the termination of the wireless connection comprises:

determining, at a base station controller, that a number of bad communication
10 frames received from the mobile device is greater than a threshold level; and

notifying one of a multimedia gateway and an application/content sever that termination of the wireless connection has occurred.

10. The method of claim 1, wherein detecting the termination of the wireless
15 connection comprises:

determining, at a base station controller, that the wireless connection cannot be handed off from a first base transceiver station (BTS) to a second BTS;

notifying one of a multimedia gateway and an application/content sever that termination of the wireless connection has occurred.

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11. The method of claim 1, wherein resuming streaming of the multimedia content based on the retained information comprises:

communicating the retained information from a multimedia gateway to an application/content sever; and

resuming streaming of the multimedia content from the application/content server to the mobile device, via a multicast router at one of:

5 the point in the multimedia content stream where the termination of the wireless connection was detected; and

 a predetermined time period earlier in the multimedia content stream than the point where the termination was detected.

10 12. The method of claim 1, wherein retaining the retained information comprises retaining the retained information with an application/content server.

 13. The method of claim 1, wherein retaining the retained information comprises:

15 communicating the retained information from an application/content server to a first multimedia gateway; and

 storing the retained information in a database operatively associated with the first multimedia gateway.

20 14. The method of claim 13, wherein resuming streaming of the multimedia content comprises:

 communicating the stored information from the first multimedia gateway to the application/content server;

responsively sending logic for resuming streaming of the multimedia content from the application/content server to one of the first multimedia gateway and a second multimedia gateway; and

executing the logic with one of the first multimedia gateway and second
5 multimedia gateway to resume the multimedia content stream.

15. The method of claim 1, wherein resuming streaming of the multimedia content occurs automatically in response to reestablishing the wireless connection.

10 16. The method of claim 1, further comprising:

responsive to reestablishing the wireless connection, providing a user with an option to resume streaming of the multimedia content or cancel streaming of the multimedia content; and

resuming streaming of the multimedia content in response to a user indication to
15 resume streaming.

17. A method for streaming multimedia content in a wireless communication system comprising:

receiving, via a packet data network, a streaming protocol command from a
20 mobile device, the command operating as a request that multimedia content be streamed to the mobile device from an application/content server coupled with the network;

streaming at least a portion of the requested multimedia content from the application/content server to the mobile device via a multimedia gateway;

detecting a termination of the wireless connection during the streaming;
retaining information in one of the multimedia gateway and the
application/content server, the information indicating a point in the multimedia content
where the termination of the wireless connection occurred;
5 re-establishing the wireless connection; and
resuming streaming of the multimedia content based on the retained information.

18. The method of claim 17, wherein the streaming protocol command is a
Real Time Streaming Protocol command.

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19. The method of claim 17, wherein streaming the multimedia content from
the application/content server to the mobile device comprises communicating the
multimedia content from the application/content server to the mobile device via the
multimedia gateway, a home agent device, a packet data serving node, a base station
15 controller and a base station transceiver, and

wherein communicating the multimedia content comprises communicating the
multimedia content in accordance with the Real Time Streaming Protocol.

20. The method of claim 17, wherein detecting the termination of the wireless
20 connection comprises:

determining, at a base station controller, that a number of bad communication
frames received from the mobile device is greater than a threshold level; and

notifying one of the multimedia gateway and the application/content sever that termination of the wireless connection has occurred.

21. The method of claim 17, wherein detecting the termination of the wireless connection comprises:

5 determining, at a base station controller, that the wireless connection cannot be handed off from a first cell-site to a second cell-site;

notifying one of the multimedia gateway and the application/content sever that termination of the wireless connection has occurred.

10 22. The method of claim 17, wherein retaining the information comprises retaining a timestamp in an extensible markup language attribute tag.

23. The method of claim 22, wherein the multimedia content is encoded with the Synchronous Multimedia Integrated Language.

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24. The method of claim 17, wherein resuming streaming of the multimedia content based on the retained information comprises:

communicating the retained information from the multimedia gateway to the application/content sever; and

20 resuming streaming of the multimedia content from the application/content server to the mobile device, via a multicast router, at one of:

the point in the multimedia content where the termination of the wireless connection was detected; and

a predetermined time period earlier in the multimedia content than the point where the termination was detected.

25. The method of claim 17, wherein resuming streaming of the multimedia content based on the retained information comprises resuming streaming of the multimedia content from the application/content server to the mobile device, via a
5 multicast router, at one of:

the point in the multimedia content where the termination of the wireless connection was detected; and

a predetermined time period earlier in the multimedia content than the point
10 where the termination was detected.

26. A mobile device having a set of instructions stored therein, that when executed, the instructions provide for:

sending, to an entity in a data network, a request to stream multimedia content to
15 the mobile device from the data network, the request being transmitted over a wireless connection;

receiving and playing a portion of the requested multimedia content stream from the data network;

detecting a termination of the wireless connection during the streaming;

20 retaining information indicating a point in the multimedia content stream where the termination of the wireless connection occurred;

re-establishing the wireless connection; and

sending the retained information to the entity in the data network; and

resuming, in cooperation with the data network, streaming of the multimedia content based on the retained information.

27. A multimedia gateway included in a data network having a set of instructions stored therein, that when executed, the instructions provide for:

5 receiving a streaming protocol command from a mobile device, the command operating as a request that multimedia content be streamed to the mobile device from an application/content server couple with the network;

streaming at least a portion of the requested multimedia content received from the application/content server to the mobile device via a packet data serving node;

10 receiving a notification from the packet data serving node that a termination of the wireless connection occurred during the streaming;

communicating the notification to the application/content server;

receiving information from the application/content server, the received information indicating a point in the multimedia content stream where the termination of
15 the wireless connection occurred and an identifier of the mobile device;

storing the received information in a database operatively associated with the multimedia gateway;

re-establishing the wireless connection;

sending the received information to the application/content server;

20 receiving logic from the application/content sever and

executing to the received logic to resume streaming of the multimedia content based on the received information.